Human skin cells converted to blood

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Over the past two years we've watched a series of scientists shoot down the prevailing idea that one adult cell type cannot be converted into a different adult cell, with researchers directly converting skin cells into insulin-producing cells, nerve cells and heart tissue. (You can see our blog entry on this work here.)

A Canadian team has become the most recent to prove that idea false, directly converting human skin cells to blood cells. The work, by a group at McMaster University in Hamilton, Canada, is the first to show that human cells are capable of such transformations, and is the first to create progenitor cells, which can form all types of cells within a given tissue.

The work was published online November 7 in Nature, which also ran a news story about the work:

> Mickie Bhatia, a stem-cell researcher at McMaster University in Hamilton, Canada, and his colleagues chose to make blood progenitors from skin cells because red blood cells created from stem cells do not make the adult form of haemoglobin. "Those cells, because they think they're embryonic, make embryonic and fetal blood," he says.

They also quote the scientist responsible for creating Dolly the sheep Ian Wilmut as saying:

> "It takes us a step along the line to believing that you can produce anything from almost anything."

It could be many years before this discovery is being transfused into the first human patient. The group used a virus to introduce new genes into the skin cells, which is problematic for human transplantation. They also need to prove in the lab and in animals that the blood cells they've produced can actually replace the function of human blood.

When Yamanaka first created iPS cells in 2007, CIRM almost immediately saw a surge in grant applications proposing to incorporate or improve on the technique. Now more than 50 of our funded awards involve human iPS cells (you can see that list here). Over the next few rounds of grant applications it will be interesting to see how many new researchers incorporate direct reprogramming into their proposals.

A.A.

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